

BACTERIAL LEAF SPOT OF *CALATHEA* SPP.

R. M. Leahy¹

INTRODUCTION: *Calathea* spp. are members of the plant family Marantaceae and are native to tropical America and Africa. There are approximately 150 species of *Calathea* described, many of which have been cultivated for their beautiful and exotic variegated foliage. Some species such as *Calathea allouia* L. produce potato-like tubers and are grown in the West Indies as a food source (1).

PATHOGEN: Foliar diseases of *Calathea* spp. are generally limited to a few fungal pathogens such as *Cercospora*, *Bipolaris*, or *Botrytis* (2). These fungi are easily controlled with fungicidal treatment and growers have been aware of their presence for many years.

In July 1990, the Florida Department of Agriculture and Consumer Services, Bureau of Plant Pathology, and the University of Florida, IFAS Extension Plant Pathology Clinic became aware of a new foliar disease problem developing on *Calathea* spp. grown at several Florida nurseries. *Calathea ornata* (Linden) Korn. seemed to be the most severely affected (Beth Lamb, Twyford Labs, personal communication). Other species such as *C. variegata* Koern. and *C. roseopicta* (Linden) Regel also had developed symptoms of this disease.

Isolations from infected plants yielded a bacterium which, based on biochemical tests, was initially believed to be a non-fluorescent *Pseudomonas* species. Subsequent hypersensitivity tests and fulfillment of Koch's postulates proved its pathogenicity; however, its identity is still unknown. Based on fatty acid analysis provided by IFAS bacteriologists, the *Calathea*-infecting bacterium does not match anything in the current computer library of fatty acid profiles. Its closest known relative at this time is the watermelon rind blotch bacterium whose identity is also unclear.

SYMPTOMS: Initial symptoms of this bacterial disease consist of small, clear, watersoaked lesions appearing on young foliage or newly emerging furred leaves. These lesions frequently develop a chlorotic halo as infection progresses. These lesions enlarge, coalesce and eventually become necrotic, often encompassing large areas of leaf tissue. A thick, sticky, glistening bacterial exudate often forms on the surface of the lesions. Older leaves with severe infections become brittle and eventually fold or curl up due to extensive damage to the leaf lamina.



Figure 1. Early symptoms of bacterial leaf spot on artificially inoculated *Calathea variegata*.



Figure 2. More advanced symptoms of bacterial leaf spot on naturally infected *Calathea ornata*.

¹ Biological Scientist H, FDACS, Division of Plant Industry, Bureau of Plant Pathology, P. O. Box 147100, Gainesville, FL 32614-7100

CONTROL: As with most foliar bacterial diseases, infection and disease development are enhanced when susceptible plants are grown under warm, humid, crowded conditions. Bacterial inoculum may be spread easily by overhead watering, rainsplash, or by unsanitary propagation procedures. Hot growing conditions (temperatures above 32C) are also believed to predispose plants to infection and are conducive to rapid disease development (Beth Lamb, Twyford Labs, personal communication).

An effective control regime for this bacterial disease will depend predominantly on proper cultural techniques and early detection. Healthy stock plants and sanitary propagation procedures are of utmost importance in avoiding or managing this disease. Do not handle potentially diseased plants while working with healthy stock. Always disinfect hands, tools, and clothing prior to entering healthy plant areas. Postpone or plan activities in potentially diseased areas until the end of the work day. Overhead watering should be avoided or at least minimized. Drip irrigation would be the most effective method to avoid wetting the foliage and disseminating inoculum.

Unfortunately, there are no registered pesticides legal for use on *Calathea* that would be effective in controlling this bacterial disease. Also, those pesticides with broad crop clearance on ornamentals would be of little bactericidal value (3).

DETECTION: When scouting *Calathea* spp. for this bacterial disease, look for small, clear, sometimes white or bleached, watersoaked leaf spots on new growth. Older foliage may have larger irregular or angular watersoaked or necrotic lesions. Older lesions may have a wet glistening appearance due to bacteria exuding from infected plant tissue.

LITERATURE CITED

1. **Everett, T. H. 1981.** The New York Botanical Garden Illustrated Encyclopedia of Horticulture. Volume 2. Gerland Publishing, Inc., New York, p. 550.
2. **Farr, D. F., G. F. Bills, G. P. Chamuris, A. Y. Rossman. 1989.** Fungi on Plants and Plant Products in the United States. APS Press, St. Paul, MN, p. 295.
3. **Kucharek, T., G. Simone, R. S. Mullin. 1990.** Florida Plant Disease Control Guide. Institute of Food and Agricultural Sciences. Univ. Fla., Gainesville, FL. p. II E-Z.